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EXAMINER

KRASNIC, BERNARD

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/700,772	Applicant(s) BERNS ET AL.	
	Examiner BERNARD KRASNIC	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The Request for Continued Examination filed 2/07/2008 have been entered and made of record.
2. The application has pending claim(s) 1-12.
3. Applicant's arguments with respect to claim(s) 1-12 have been considered but are moot in view of the new ground(s) of rejection because of the Request for Continued Examination (RCE).
4. Applicant's arguments filed 2/07/2008 have been fully considered but they are not persuasive.

The Applicant alleges, "Entry of Evidence ..." in page 8, and states respectively that the "Digital Color Management: Encoding Solutions" evidence should be entered. The Examiner has entered this evidence and has considered the text as well.

The Applicant alleges, "In the Advisory Action, the Examiner ..." in page 8, and states respectively that the Applicant have amended each of the independent claims 1, 5, 6, and 10-12 to clarify that the colorimetric values are either CIE-L*a*b* values or CIE-XYZ values and that the combination of Arai in view of Takahashi would not have rendered the presently claimed subject matter obvious to one having ordinary skill in the art. However the Examiner disagrees because as stated in the Examiner's Advisory Action dated 12/21/2007, the prior art reference Takahashi clearly states that the color

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difference index (1206) may be calculated by taking the color difference between the data on the two L*a*b* areas (1204 and 1205) instead of using the spectral reflectance's (1201 and 1202) to calculate the color difference index (1207) [see Takahashi, col. 7, lines 1-5, Fig. 12, equation 1]. Therefore claims 1-12 are still not in condition for allowance because they are still not patentably distinguishable over the prior art references.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 5 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re Claims 5 and 10, lines 6 and 9 respectively: The limitation "substantially equal" in line 6 and the limitation "substantially reproduces" in line 9 renders this claim indefinite and unclear because "substantially" is just a relative term. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al (US 5,929,906, as applied in previous Office Action) in view of Takahashi et al (US 6,987,567, as applied in previous Office Action).

Arai, as recited in claim 1, discloses an apparatus (20, 50) for performing color conversion / color correcting with reference to a profile / parameters or connection weights (24, 55) defining correspondence between colorimetric value data and ink amount data (see Figs. 1 and 10, title, col. 6, lines 36-40, col. 5, lines 47-54, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48), comprising a profile memory (24, 55) (see Figs. 1 and 10) for storing a plurality of profiles, a color converter / conversion portion (53, 54) for selecting one of the plurality of profiles and for converting given colorimetric data into ink amount data with reference to the selected profile (see Fig. 10, col. 11, lines 32-43, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48).

Arai, as recited in claim 3, discloses the color converter / conversion portion (53, 54) receives selection of one of the printing conditions / usable illuminants (see Fig. 10, col. 6, lines 36-40, the profile memory gives the color converter printing conditions such

as usable illuminants, col. 11, lines 44-50, the usable illuminants being the daylight illuminant and the designated illuminant, col. 13, lines 31-40).

Arai, as recited in claim 4, the plurality of profiles / usable illuminants are associated with plural types of images / daylight and designated illuminant images to be reproduced by the ink amount data, and the color converter / conversion portion (53, 54) receives selection / from profile memory (55) of one of the plural types of images, and selects the profile associated with the selected image type (see Fig. 10, col. 11, lines 44-50, col. 13, lines 32-40).

Arai, as recited in claim 5, discloses an apparatus (20, 50) for converting colorimetric value data / color correcting unit (20, 50) into ink amount data (see Figs. 1 and 10, Abstract, col. 3, lines 9-28 and lines 45-58), comprising a first converter / converter portion (53, 54) for receiving colorimetric value data including either CIE- $L^*a^*b^*$ values or CIE-XYZ values and outputting ink amount data such that two colorimetric values of a virtual sample patch to be printed with the same ink amounts represented by the ink amount data under two different viewing conditions / usable illuminants (see Fig. 10, col. 6, lines 36-40, the profile memory gives the color converter printing conditions such as usable illuminants, col. 11, lines 44-50, the usable illuminants being the daylight illuminant and the designated illuminant, col. 3, lines 45-58, col. 13, lines 31-40, col. 8, lines 1-9, equation 6 and 7, the colorimetric values are the CIE- $L^*a^*b^*$ or CIE-XYZ values) are substantially equal to each other (col. 2, lines 38-45, col. 1, lines 60-61, Arai's converters are used to prevent the printed image to look unnatural by making sure that the same color amounts match when viewed under

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different illuminants); a second converter / converter portion (53, 54) for receiving colorimetric value data including either CIE-L*a*b* values or CIE-XYZ values and outputting ink amount data such that the ink amounts represented by the ink amount data substantially reproduces spectral reflectance associated with the received colorimetric value (see Fig. 10, Abstract, col. 3, lines 9-28 and 45-60, col. 3, lines 13-21 and 56-58, Arai's converters are used to convert these colorimetric values to spectral reflectance's or corresponding CIE L*a*b values, col. 3, lines 45-58, col. 13, lines 31-40, col. 8, lines 1-9, equation 6 and 7, the colorimetric values are the CIE-L*a*b* or CIE-XYZ values); a selector / profile memory (24, 55) for selecting one of the first and second converters (see Figs. 1 and 10, col. 3, lines 9-28 and 45-60, col. 6, lines 36-40, the profile memory controls the weights of the neural network which essentially tell the converters what to process, col. 3, lines 22-28, an optimization means represented by the third converter and the memory where the optimization means obtains the output from the first and second converters and uses or selects the specific converter's output which minimizes the square error and minimizes the average color difference by use of neural networks to produce the output printed image data, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48); and an image processor / color correcting unit (20, 50) for converting given colorimetric value data into ink amount data using the selected converter (see Figs. 1 and 10, Abstract, col. 3, lines 9-28, col. 11, lines 32-43, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48).

Arai, as recited in claim 12, discloses an apparatus (20, 50) for producing a profile / parameters or connection weights (24, 55) defining correspondence between

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colorimetric value data and ink amount data representing a set of ink amounts of plural inks usable by a printer (see Figs. 1 and 10, title, col. 6, lines 36-40, col. 5, lines 47-54, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48), comprising a spectral printing model converter / conversion portion (53, 54) (see Fig. 10, col. 3, lines 9-28), and a profile generator / profile memory (24, 55) producing a profile defining correspondence between colorimetric value data and ink amount data based on the selected plural sample ink amount data (see Figs. 1 and 10, title, col. 6, lines 36-40 and 45-59, col. 5, lines 47-54, col. 13, lines 10-19, col. 3, lines 45-58, col. 13, lines 31-40, col. 11, lines 44-48, col. 8, lines 1-9, equations 6 and 7).

However, Arai fails to specifically disclose, as recited in claim 1, that each profile being produced using plural sample ink amount data selected based on an evaluation index including a color difference index and an image quality index. Arai also fails to specifically disclose, as recited in claim 2, that the color difference index and the image quality index includes plural types of indices, and the color converter receives user selection of the color difference index and the image quality index. Arai also fails to specifically disclose, as recited in claim 3, that the color difference index and the image quality index are associated with plural types of printing conditions. Arai also fails to specifically disclose, as recited in claim 5, that the colorimetric value data of a virtual sample patch under two different viewing conditions are substantially equal. Arai also fails to specifically disclose, as recited in claim 12, a spectral printing model converter for a color patch, a selector for selecting one of a plurality of color difference and image

quality indices, a calculator for calculating a color difference and an evaluation index, and a selector based on the evaluation index.

Takahashi, as recited in claim 1, discloses that each profile being produced using plural sample ink amount data selected based on an evaluation index / evaluation calculator (11) including a color difference index / difference calculator (8) and an image quality index / target color spectral data (5), the color difference index representing a color difference between a sample color / target color spectral data which is calculated from spectral reflectance of a virtual sample patch / target color to be printed with ink amounts represented by the sample ink amount data and a comparative color / compare color or evaluation color which is selected as a basis for comparison / color matching (6), the image quality index / target color spectral data representing image quality of the virtual sample patch / target color, the evaluation index for the plurality of profiles being defined to have different functional forms (see Fig. 1, Abstract, col. 5, lines 57-58), and the color difference index / color difference (1206) not being calculated from differences in the spectral reflectance of the sample color and the comparative color but rather being calculated from differences in colorimetric values of the sample color / target color (1204) and comparative color / evaluation color (1205) (see col. 7, lines 1-5, Fig. 12), the colorimetric values being either CIE-L*a*b* values / L*a*b* or CIE-XYZ values (see col. 7, lines 1-5, Fig. 12, equation 1).

Takahashi, as recited in claim 2, discloses the color difference index / color difference (1206) includes plural types of available color difference indices (see Fig. 12, col. 7, lines 1-5, equation 1), and the image quality index / target color spectral data

includes plural types of available image quality indices (see Abstract, respective frequencies in the spectrum), and the color converter (taught by Arai in claim 1 above) receives user selection of the color difference index and the image quality index (see col. 6, lines 22-25 and 36-39, the color difference index is received through user selection because both the target and evaluation spectral data are received by the users instructions and the difference is made from these two L*a*b* equivalent elements making the difference index essentially user selected), and selects the profile produced using the evaluation index including the selected color difference index and the selected image quality index (the profile essentially is the evaluation index or value produced by the user selected color difference index).

Takahashi, as recited in claim 3, discloses the color difference index / color difference calculator (1206) and the image quality index / target color spectral data has plural available types that are associated with a plurality of printing conditions / usable illuminants (9, S501) (see Figs. 1 and 5, Abstract, col. 6, lines 22-35, the plural available printing conditions are the usable illuminants produced by the light source, col. 8, lines 1-16), and the color converter receives selection of one of the printing conditions (the converter receives the profile being the evaluation index under the usable illuminants), and selects the profile (the profile essentially is the evaluation index or value) produced using the evaluation index / evaluation calculator (11) including proper types of the color difference index / color difference (8, 1206) and the image quality index / target color spectral data associated with the selected printing condition / usable illuminants (see Figs. 1 and 12).

Takahashi, as recited in claim 5, discloses a virtual sample patch / target color to be printed with the same ink amounts represented by the ink amount data under two different viewing conditions / usable illuminants (9, S501) are substantially equal to each other (see Figs. 1 and 5, Abstract, lines 14-18, col. 6, lines 22-35, the different viewing conditions are the usable illuminants produced by the light source and they could be substantially equal if the user enters appropriate light source information, col. 8, lines 1-16, col. 7, lines 1-5, $L^*a^*b^*$ are appropriate colorimetric values which are used).

Takahashi, as recited in claim 12, discloses a spectral printing model converter / spectral error evaluation apparatus (1, 2) for converting ink amount data to spectral reflectance of a color patch / evaluation color to be printed according to the ink amount data, the spectral printing model converter converting each of a plurality of sample ink amount data into spectral reflectance of a virtual sample patch / target color to be printed with the ink amounts represented by the sample ink amount data; a selector / evaluation value calculator for selecting one of a plurality (see Fig. 1, Abstract, respective frequencies in the spectrum) of color difference indices / difference calculator (8) and one or more of a plurality (see Fig. 1, Abstract, respective frequencies in the spectrum) of image quality indices / target color spectral data (5), each color difference index representing a color difference between a sample color / target color which is calculated from the spectral reflectance and a comparative color / compare color or evaluation color which is selected as a basis for comparison / color matching (6), each image quality index / target color spectral data representing image quality of the virtual sample patch / target color to be printed according to the sample ink amount data, and

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each color difference index / color difference (1206) not being calculated from differences in the spectral reflectance of the sample color and the comparative color but rather being calculated from differences in colorimetric values of the sample color / target color (1204) and the comparative color / evaluation color (1205) (see col. 7, lines 1-5, Fig. 12), the colorimetric values being either CIE-L*a*b* values / L*a*b* or CIE-XYZ values (see col. 7, lines 1-5, Fig. 12, equation 1); a calculator / difference calculator (8, 1206) for calculating values of the selected color difference index and the selected image quality index for the plurality of sample ink amount data; a calculator / evaluation value calculator (11, 1207) for calculating an evaluation index using the values of the selected color difference index and the selected image quality index for the plurality of sample ink amount data; a selector / (Arai's conversion portion selects from Arai's profile memory a profile which is essentially Takahashi's evaluation value) for selecting plural sample ink amount data based on the evaluation index (see Fig. 1, Abstract, col. 5, lines 57-58).

Therefore, in view of Takahashi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arai's color correcting method and apparatus by including the capabilities of having the evaluation index as part of the profile, allowing the user selection of the color difference, having the color difference index and the image quality index to be associated with plural viewing conditions, having the colorimetric value data of a virtual sample patch under two different viewing conditions being substantially equal, having a spectral printing model converter with the two calculators in Arai's conversion portions, in order to further

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enhance the efficiency of the entire conversion by improving the precision and accuracy through evaluation means (see Takahashi, abstract, lines 14-18).

As to claims 6-9, the claims are the corresponding method claims to claims 1-4 respectively. The discussions are addressed with regard to claims 1-4.

As to claim 10, the claim is the corresponding method claim to claim 5 respectively. The discussions are addressed with regard to claim 5.

As to claim 11, the claim is the corresponding method claim to claim 12 respectively. The discussions are addressed with regard to claim 12.

Provisional Obviousness-Type Double Patenting Rejection

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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10. Claims 11 and 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/700,658 in view of Takahashi et al (US 6,987,567 B2). Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claimed invention obviously encompasses the claimed invention of '658 Patent Application and differ only in the terminology.

For instance, in claims 11 and 12 of present claimed invention, the Applicant recites: "A method of producing a profile defining correspondence between colorimetric value data and ink amount data representing a set of ink amounts of plural inks usable by a printer comprising (a) providing a spectral printing model converter ..., (b) providing a plurality of sample in amount data ..., (c) converting each sample ink amount data ..., (d) selecting one of a plurality of color difference indices ..., (e) calculating values of the selected color difference index ..., (f) calculating an evaluation index ..., (g) selecting plural sample ink amount data based on the evaluation index, and (h) producing a profile ..." in claim 11 and "An apparatus for producing a profile defining correspondence between colorimetric value data and ink amount data representing a set of ink amounts of plural inks usable by a printer comprising a spectral printing model converter ..., a selector for selecting one of a plurality of color difference indices ..., a calculator for calculating values of the selected color difference index ..., a calculator for calculating an evaluation index ..., a selector fore selecting plural sample ink amount data ..., and a profile generator producing a profile defining correspondence ..." in claim 12.

Whereas, in claim 1 of '658 Patent Application, the Applicants claim: "A method of producing a profile defining correspondence between calorimetric value data and ink amount data representing a set of ink amounts of plural inks usable by a printer comprising (a) providing a spectral printing model converter ..., (b) providing a plurality of sample ink amount data ..., (c) converting each sample ink amount data ..., (d) calculating an evaluation index ..., (e) selecting plural sample ink amount data ..., (f) producing a profile ...".

Accordingly, in respect to above discussions, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the teachings of claim 1 of '658 Patent Application as a general teachings for a method and an apparatus for producing a profile defining correspondence between colorimetric value data and ink amount data as claimed by the present application. The instant claims obviously encompass the claimed invention of '658 Patent Application.

However, claim 1 of '658 Patent Application fails to disclose or fairly suggest and each color difference index not being calculated from differences in the spectral reflectance of the sample color and the comparative color but rather being calculated from differences in colorimetric values of the sample color and the comparative color.

Takahashi discloses each color difference index not being calculated from differences in the spectral reflectance of the sample color and the comparative color but rather being calculated from differences in colorimetric values of the sample color and the comparative color (see Takahashi, col. 7, lines 1-5, Figs. 1 and 12),), the

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colorimetric values being either CIE-L*a*b* values / L*a*b* or CIE-XYZ values (see col. 7, lines 1-5, Fig. 12, equation 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '658 using Takahashi's teachings by including to '658's color difference index calculator the means to calculate the difference by using the colorimetric values instead of spectral reflectance values in order to further enhance the efficiency of the entire conversion by improving the precision and accuracy through evaluation means (see Takahashi, abstract, lines 14-18).

This is a provisional obviousness-type double patenting rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakano discloses a color image reproducing system with image signal correction function.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-1357. The examiner can normally be reached on Mon-Thur 8:00am-4:00pm and every other Friday 8:00am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bernard Krasnic
March 10, 2008

/J. W./

Supervisory Patent Examiner, Art Unit 2624